

## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
8 March 2001 (08.03.2001)

PCT

(10) International Publication Number  
**WO 01/17122 A1**

(51) International Patent Classification<sup>7</sup>: H04B 1/26, 1/28, H03D 7/16

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(21) International Application Number: PCT/CA00/00996

(22) International Filing Date:  
1 September 2000 (01.09.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
2,281,236 1 September 1999 (01.09.1999) CA

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(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

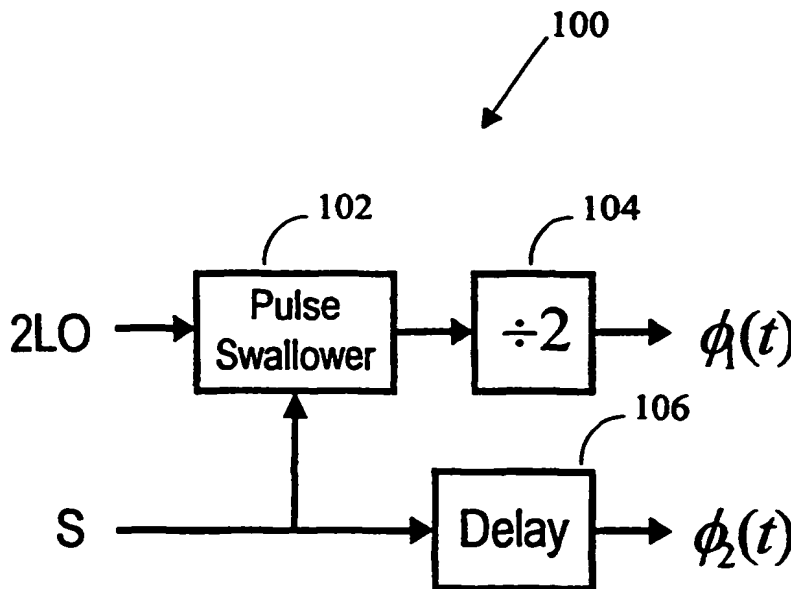
(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

## Published:

- With international search report.
- Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: IMPROVED METHOD AND APPARATUS FOR UP- AND DOWN-CONVERSION OF RADIO FREQUENCY (RF) SIGNALS



(57) Abstract: This patent describes a method and system which overcomes the LO-leakage problem of direct conversion and similar RF transmitters and receivers. To solve this problem a virtual LO<sup>TM</sup> signal is generated which emulates mixing with a local oscillator (LO) signal. However, the virtual local oscillator (VLO) signal is constructed using signals that do not contain a significant amount of power (or no power at all) at the wanted output RF frequency, so there is no LO component to leak to the output. The invention also does not require sophisticated filters or large capacitors as other designs in the art, so it is fully integratable.

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